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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,520	12/30/2003	Irene Spitsberg	129968	7282
49305	7590	06/24/2005	EXAMINER	
JAGTIANI + GUTTAG 10363-A DEMOCRACY LANE FAIRFAX, VA 22030			MCNEIL, JENNIFER C	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 06/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/748,520

Applicant(s)

SPITSBERG ET AL.

Examiner

Jennifer C. McNeil

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12 and 14-28 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1,2,4-12 and 14-28 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 4-12, 14-18, and 21-28 are rejected under 35 U.S.C. 102(a) as being anticipated by Bruce (US 20030224200 A1). Bruce teaches a thermal barrier coating material for turbine engine components. The coating material comprises zirconia stabilized with yttria, and one or more of lanthana, neodymia, or tantala. Regarding claim 3, the first oxide is considered yttria, which may be added in an amount of up to about 10 wt%, and the second oxide is lanthana, which may be added in an amount of up to about 5 wt%. Bruce also includes a bond coating between the substrate and the thermal barrier. The thermal barrier may have a thickness of about 75-300 microns.

A composition comprising 90 wt% zirconia, 7 wt% yttria, and 3 wt% lanthana corresponds to 94.8 mol% zirconia, 4 mol% yttria, and 3 mol% lanthana. Please see the attached conversion chart.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 2, 4-12, and 14-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruce (US 2003/0224200 A1). Bruce teaches a thermal barrier coating as discussed above, but does not give additional thicknesses for the thermal barrier coating. While Bruce does not give specific examples falling within the claimed range, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Bruce overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Bruce teaches that the thickness should be sufficient to provide the required thermal protection for the underlying substrate. While Bruce gives one example of a thickness, one of ordinary skill in the art would recognize that a thicker coating would provide increased thermal resistance.

### ***Response to Arguments***

Applicant's amendments have overcome the rejections over Rickerby '078, Mazdiyasni '597, and Litton '422. Upon conversion of the ranges taught by Bruce, the above rejections have been made.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C. McNeil whose telephone number is 571-272-1540.

The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jennifer McNeil  
June 20, 2005

Wt percent to mol percent- 35 compounds.xls

	MW	mol% Ex1	mol% Ex2	mol% Ex3	mol% Ex4	mol% Ex5	mol% Ex6	mol% Ex7	mol% Ex8	mol% Ex9	mol% Ex10	wt% Ex 1	wt% Ex 2	wt% Ex3	wt% Ex4	wt% Ex5	wt% Ex6	wt% Ex7	wt% Ex8	wt% Ex9	wt% Ex10	
SiO2	60	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											SiO2
B2O3	70	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											B2O3
P2O5	142	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											P2O5
GeO2	104	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											GeO2
Al2O3	102	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Al2O3
Li2O	30	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Li2O
Na2O	62	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Na2O
K2O	94	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											K2O
MgO	40	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											MgO
CaO	56	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											CaO
SrO	104	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											SrO
BaO	153	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											BaO
ZnO	81	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											ZnO
PbO	224	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											PbO
ZrO2	122	94.8	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####	90.0										ZrO2
TiO2	80	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											TiO2
CeO2	172	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											CeO2
SbO2	153	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											SbO2
SnO2	151	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											SnO2
MoO3	146	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											MoO3
Fe2O3	160	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Fe2O3
Pr2O3	330	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Pr2O3
La2O3	326	1.2	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####	3.0										La2O3
Y2O3	226	4.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####	7.0										Y2O3
Er2O3	380	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Er2O3
Yb2O3	396	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Yb2O3
Ta2O5	442	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Ta2O5
Nb2O3	234	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Nb2O3
Nd2O3	332	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											Nd2O3
Nb2O5	266	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											
Gd2O3	364	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											
CuO	79	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											CuO
CoO	75	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											CoO
NiO	74	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											NiO
MnO2	87	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											MnO2
F2	38	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											F2
As2O3	198	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											As2O3
FeO	72	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											FeO
SO3	80	0.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####											SO3
		100.0	#####	#####	#####	#####	#####	#DIV/0!	#####	#####	#####	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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